

QUIZ NAVIGATION



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| Started on | Friday, 11 October 2024, 6:48 PM |
| State | Finished |
| Completed on | Friday, 11 October 2024, 6:51 PM |
| Time taken | 3 mins 42 secs |
| Grade | 6.00 out of 10.00 (60%) |

Question 1

ID: 50316

Correct

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THE NEXT 3 QUESTIONS INCLUSIVE REFER TO THE FOLLOWING CASE:

You are working as a clinical pharmacist at a pharmacy that specializes in providing medical care for marginalized patient populations in the downtown area. TA, a 45-year-old homeless man with schizophrenia, who according to your records has been visiting your pharmacy for the past 4 years, arrives for his monthly prescription renewal. You pull up his electronic profile and see that he was last dispensed sixty tablets of perphenazine 24 mg PO BID thirty days ago from today. When you ask him when the last time he visited a doctor was, he admits that he has been unable to get an appointment with his psychiatrist for the past year. His psychiatrist has been providing refill authorizations to your pharmacy through the fax machine. During this visit, you cannot help but notice that he appears to have a fixed gaze with his tongue rolling and lip-smacking.

Which of the following is the most probable explanation for his appearance on today's visit?

Select one:

- ☐ a. He is intoxicated ✖
- ☒ b. He is having a medication-related side effect ✔
- ☐ c. He has stopped taking medications and is hallucinating ✖
- ☐ d. He has stopped taking medications and is delusional ✖

Rose Wang (ID:113212) this answer is correct. This description of the tongue rolling and lip-smacking are typical characteristics of tardive dyskinesia, which is a common side effect of perphenazine.

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Schizophrenia**LEARNING OBJECTIVE:**

Identify antipsychotic-related side effects.

BACKGROUND:

Schizophrenia is a mental disorder in which psychoses are a key hallmark feature. Schizophrenia can cause significant impairment in a patient's ability to function in day-to-day life. The pathophysiology is thought to be related to a dysfunction in dopamine, but it is not fully understood or known. Patients with schizophrenia can have negative and positive symptoms.

Negative symptoms are described as a decrease or absence of normal function and include symptoms such as apathy, anhedonia, and asocial behaviour to name a few. Positive symptoms are described as an excess or distortion of normal function and include symptoms such as hallucinations, delusion, and disorganized thought and speech to name a few. Patients can also present with mood or cognitive issues as well such as depression, anxiety, and impaired attention.

Antipsychotics are the mainstay of treatment. Antipsychotics are categorized into two distinct categories: first-generation/typical antipsychotics and second-generation/atypical antipsychotics.

First-generation antipsychotics (such as perphenazine) are more likely to cause extrapyramidal symptoms (EPS) than second-generation antipsychotics (e.g. lurasidone).

EPS is postulated to be caused by the blockade of dopamine receptors which increases cholinergic activity.

EPS occurs when antipsychotics are first started or when there is a dose increase. A specific type of EPS called tardive dyskinesias (TD), tend to occur months to years after being on antipsychotic therapy.

Other types of EPS include dystonias (prolonged tonic muscle contractions), and akathisia (restlessness) to name a few.

TD is characterized by involuntary and abnormal movements such as orofacial movements (e.g. tongue rolling and lip-smacking).

RATIONALE:**Correct Answer:**

- **He is having a medication-related side effect** - This description of the tongue rolling and lip-smacking are typical characteristics of tardive dyskinesia, which is a common side effect of perphenazine.

Incorrect Answers:

- **He is intoxicated** - There is insufficient information to support this conclusion that he is intoxicated.
- **He has stopped taking medications and is hallucinating** - These symptoms are not characteristic of hallucinations.

- **He has stopped taking medications and is delusional** - These symptoms are not characteristic of delusions.

TAKEAWAY/KEY POINTS:

Antipsychotics (especially first-generation antipsychotics such as perphenazine) can cause tardive dyskinesias with chronic use.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
- [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
- [4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: He is having a medication-related side effect

Question 2

ID: 50319

Incorrect

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TA's doctor would like you to speak to TA about tardive dyskinesia.

All of the following statements regarding Tardive Dyskinesia (TD) are true **EXCEPT**:

Select one:

- ☒ a. TD affects only the limbs ✓
- ☐ b. TD can occur with chronic antipsychotic use ✗
- ☐ c. It is rarely reversible unless the medications is re-evaluated and stopped early ✗
- ☐ d. The risk of TD is higher in geriatric patients ✗

Rose Wang (ID:113212) this answer is incorrect. TD should be considered as an irreversible long-term side effect by prescribers, though in some instances switching agents or lowering doses may improve severity.

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Schizophrenia

LEARNING OBJECTIVE:

Identify important counselling points to know about Tardive Dyskinesias (TD).

BACKGROUND:

First-generation antipsychotics (such as perphenazine) are more likely to cause extrapyramidal symptoms (EPS) than second-generation antipsychotics (e.g. lurasidone).

EPS is postulated to be caused by the blockade of dopamine receptors which increases cholinergic activity. EPS occurs when antipsychotics are first started or when there is a dose increase. A specific type of EPS called tardive dyskinesias (TD), tend to occur months to years after being on antipsychotic therapy.

TD is generally considered irreversible and discontinuation of the drug will not often fully reverse the symptoms. In some cases, if TD is caught early and the drug is discontinued, symptoms may fully disappear but this is more the exception rather than the rule. Certain patient populations such as seniors are more sensitive to the effects of antipsychotics, including TD. Up to 25% of seniors will experience TD in the first year of antipsychotic use.

Other types of EPS include dystonias (prolonged tonic muscle contractions), and akathisia (restlessness) to name a few.

TD is characterized by involuntary and abnormal movements such as orofacial movements (e.g. tongue rolling and lip-smacking).

RATIONALE:

Correct Answer:

- **TD affects only the limbs** - TD is a movement disorder affecting the face, tongue, and limbs.

Incorrect Answers:

- **TD can occur with chronic antipsychotic use** - Chronic use of antipsychotics (especially first-generation drugs) can cause TD.
- **It is rarely reversible unless the medications is re-evaluated and stopped early** - TD should be considered as an irreversible long-term side effect by prescribers, though in some instances switching agents or lowering doses may improve severity.
- **The risk of TD is higher in geriatric patients** - The risk of TD in the first year as high as 25% in the geriatric populations.

TAKEAWAY/KEY POINTS:

The risk of developing TD in the first year is as high as 25% in the elderly.

the risk of developing TD in the first year is as high as 25% in the elderly.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
[2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
[3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
[4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: TD affects only the limbs

Question 3

ID: 30322

Incorrect

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TA's tardive dyskinesia is worsening, so he asks you about switching therapy.

Which of the following antipsychotics is **LEAST** likely to produce tardive dyskinesia as a side effect?

Select one:

- ☐ a. Risperidone ✖
- ☐ b. Olanzapine ✖
- ☒ c. Clozapine ✔
- ☐ d. Loxapine ✖

Rose Wang (ID:113212) this answer is incorrect. First-generation antipsychotics have a high risk of TD.

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Schizophrenia

LEARNING OBJECTIVE:

Identify which antipsychotic has the least risk of causing tardive dyskinesia (TD).

BACKGROUND:

Antipsychotics are the mainstay of treatment. Antipsychotics are categorized into two distinct categories: first-generation/typical antipsychotics and second-generation/atypical antipsychotics.

Different antipsychotics have different propensities for different side effects. For example, TD is a side effect of long-term antipsychotic therapy which presents with involuntary and abnormal movements. TD tends to occur more with first-generation antipsychotics (e.g. haloperidol, loxapine and perphenazine) in comparison to second-generation antipsychotics (e.g. risperidone, olanzapine and clozapine).

Clozapine is a second-generation antipsychotic which has very rare rates of TD. Other second-generation antipsychotics have a higher rate of TD than clozapine but generally a lower rate than first-generation antipsychotics.

RATIONALE:

Correct Answer:

- **Clozapine** - The risk of developing TD on clozapine is rare.

Incorrect Answers:

- **Risperidone** - Risperidone does not have the lowest risk of TD out of the options provided.
- **Olanzapine** - Olanzapine does not have the lowest risk of TD out of the options provided.
- **Loxapine** - First-generation antipsychotics have a high risk of TD.

TAKEAWAY/KEY POINTS:

Clozapine has a low/rare incidence of causing TD.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
[2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
[3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
[4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Clozapine

Question 4

ID: 30324

Incorrect

AJ is a 24-year-old male with a recent diagnosis of schizophrenia. He has no allergies and is not currently taking any medications. AJ has a first cousin who also has schizophrenia, and his cousin experienced gynecomastia as a side effect of an antipsychotic. AJ is very hesitant to begin any medications for his schizophrenia in case he also experiences this side effect. AJ's psychiatrist asks

you to discuss the risk of hyperprolactinemia and gynecomastia from antipsychotics to AJ. You explain to AJ that gynecomastia is a potential side effect of antipsychotics, but that it is more likely with certain antipsychotics that may induce hyperprolactinemia.

Which of the following antipsychotics would you **NOT** recommend to AJ due to the potential to cause a significant amount of hyperprolactinemia?

Select one:

- ☐ a. Clozapine ✗
- ☐ b. Lurasidone ✗
- ☒ c. Risperidone ✓
- ☐ d. Aripiprazole ✗

Rose Wang (ID:113212) this answer is incorrect. Clozapine rarely causes hyperprolactinemia.

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Schizophrenia

LEARNING OBJECTIVE:

Identify which antipsychotic has a significant risk of causing hyperprolactinemia.

BACKGROUND:

Antipsychotics are the mainstay of treatment for schizophrenia. Different antipsychotics have different incidence rates for various side effects. The side effect profile, along with each individual patient drives the selection of which antipsychotic to choose. Common side effects of antipsychotics include weight gain, sedation, extrapyramidal symptoms, QTc prolongation, seizure risk, metabolic syndrome (increased blood sugar, hyperlipidemia), hyperprolactinemia, and anticholinergic properties. Agents with a high risk of hyperprolactinemia include risperidone and paliperidone. Agents with a low risk of hyperprolactinemia include olanzapine, ziprasidone, and lurasidone. Agents with a rare occurrence of hyperprolactinemia include clozapine, quetiapine, and aripiprazole. Asenapine was shown to have minimal/no risk of hyperprolactinemia.

RATIONALE:

Correct Answer:

- **Risperidone** - Risperidone has a high incidence of causing hyperprolactinemia.

Incorrect Answers:

- **Clozapine** - Clozapine rarely causes hyperprolactinemia.
- **Lurasidone** - Lurasidone has a low incidence of causing hyperprolactinemia.
- **Aripiprazole** - Aripiprazole rarely causes hyperprolactinemia.

TAKEAWAY/KEY POINTS:

Risperidone has a high incidence of causing hyperprolactinemia.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
- [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
- [4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Risperidone

Question 5

ID: 30326

Correct

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THE NEXT 2 QUESTIONS INCLUSIVE REFER TO THE FOLLOWING CASE:

RJ, a 26-year-old woman who graduated one year ago from an aerospace engineering program, was brought to the emergency department by the police after she was apprehended at the airport. Apparently, she caused a serious disruption after she persuaded local security officials that she worked for the national transportation agency and that she had reason to believe that there was an imminent threat to passenger safety. Police records revealed a call six months prior to her former university where she reported suspicious activity on campus. She was not violent, so she was warned about being charged with mischief if the behaviour happened again. At the hospital, she appeared to be speaking to someone. She demanded to know who was watching the security videos because she feared for her safety. Apparently, she had "decided it was best to leave" her job at the transportation agency 9 months ago because someone was controlling her actions, and decided to "go solo" as a private investigator, watching news broadcasts of major economic and political meetings in her apartment for hidden clues. She denied changes to her mood such as depression or elation and stated that she was eating and sleeping, but very irregularly. She has been worried about how to pay her bills as her undercover employers have been delaying sending her paycheques. She had been isolated from friends and family since her graduation.

All of the following are examples of "delusions", **EXCEPT**:

Select one:

- ☐ a. Believing that one is employed as a 'special private investigator' for an agency without verifiable proof ✖
- ☒ b. Hearing voices and responding back ✔ *Rose Wang (ID:113212) this answer is correct. Hearing voices and responding back is a hallucination.*
- ☐ c. Believing that people are watching or following you ✖
- ☐ d. Knowing that outside forces mean to do you harm, regardless of evidence ✖

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Schizophrenia

LEARNING OBJECTIVE:

Compare and contrast the difference between delusions and hallucinations.

BACKGROUND:

Schizophrenia is a mental disorder in which psychoses are a key hallmark feature. Schizophrenia can cause significant impairment in a patient's ability to function in day-to-day life. The pathophysiology is thought to be related to a dysfunction in dopamine, but it is not fully understood or known. Patients with schizophrenia can have negative and positive symptoms. Negative symptoms are described as a decrease or absence of normal function and include symptoms such as apathy, anhedonia, and asocial behaviour to name a few. Positive symptoms are described as an excess or distortion of normal function and include symptoms such as hallucinations, delusion, and disorganized thought and speech to name a few. Patients can also present with mood or cognitive issues as well such as depression, anxiety, and impaired attention. Hallucinations are defined as seeing, feeling, or hearing things that are not there (e.g. seeing a person or hearing voices that only you can see or hear). Delusions are defined as fixed false beliefs. These beliefs are believed by the person and regardless of any information to the contrary of these beliefs, the patient continues to believe in this delusion.

RATIONALE:

Correct Answer:

- **Hearing voices and responding back** - Hearing voices and responding back is a hallucination.

Incorrect Answers:

- **Believing that one is employed as a 'special private investigator' for an agency without verifiable proof** - This might be classified as a grandiose delusion.
- **Believing that people are watching or following you** - This is an example of a persecutory delusion.
- **Knowing that outside forces mean to do you harm, regardless of evidence** - This is an example of a persecutory delusion.

TAKEAWAY/KEY POINTS:

Hallucinations are experiencing an auditory, visual or tactile perception that is not real.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrxtx.ca>.
- [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
- [4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Hearing voices and responding back

Question 6

ID: 50330

Correct

🚩 Flag question

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RJ is reluctant to start any medication because she does not believe she needs it. The emergency department physician diagnoses her with schizophrenia and asks you to speak to RJ about the benefits and risks associated with antipsychotic use. After a long talk where you provide RJ with many different medication options, she agrees to try olanzapine rather than risperidone.

Which of the following statements is true:

Select one:

- ☐ a. Olanzapine has a lower risk of weight gain than risperidone ✖
- ☒ b. Olanzapine has a higher risk of increased glucose levels than risperidone ✔ *Rose Wang (ID:113212) this answer is correct. Olanzapine has a higher risk of causing increased glucose levels than risperidone.*

- ☐ c. Olanzapine has a higher risk of prolactinemia than risperidone ✖
- ☐ d. Risperidone is more sedating than olanzapine ✖

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Schizophrenia

LEARNING OBJECTIVE:

Identify the differences in the side effect profile of olanzapine compared to risperidone.

BACKGROUND:

Antipsychotics are the mainstay of treatment for schizophrenia. Different antipsychotics have different incidence rates for various side effects. The side effect profile, along with each individual patient drives the selection of which antipsychotic to choose. Common side effects of antipsychotics include weight gain, sedation, extrapyramidal symptoms, QTc prolongation, seizure risk, metabolic syndrome (increased blood sugar, hyperlipidemia), hyperprolactinemia, and anticholinergic properties to name some.

RATIONALE:

Correct Answer:

- **Olanzapine has a higher risk of increased glucose levels than risperidone** - Olanzapine has a higher risk of causing increased glucose levels than risperidone.

Incorrect Answers:

- **Olanzapine has a lower risk of weight gain than risperidone** - Olanzapine has a higher risk of weight gain than risperidone.
- **Olanzapine has a higher risk of prolactinemia than risperidone** - Risperidone has a higher risk of prolactinemia than olanzapine.
- **Risperidone is more sedating than olanzapine** - Olanzapine is more sedating than risperidone.

TAKEAWAY/KEY POINTS:

Olanzapine has a high incidence of causing blood glucose abnormalities, especially compared to risperidone. Olanzapine causes more weight gain and is more sedating than risperidone. Risperidone is more likely than olanzapine to cause hyperprolactinemia.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
- [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
- [4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Olanzapine has a higher risk of increased glucose levels than risperidone

Question 7

ID: 30334

Correct

Flag question

Send Feedback

KA is a 24-year-old woman who presents to your clinic with her boyfriend. Her boyfriend reports that she has been acting strangely over the past few months. On multiple occasions, he has come home from work to find her speaking to an imaginary dog. She has admitted that the dog often commands her to do things to hurt other people. A few weeks ago, she was arrested and taken in by the police after she crashed into the side of a residential home. Upon questioning by the police, she said that she did it under the instructions of her dog. Her past medical history is significant for depression and seasonal allergies. Her medications include:

- Citalopram 20 mg 1 tablet PO once daily
- Cetirizine 10 mg 1 tablet PO once daily PRN

KA's boyfriend states that her family physician would like to start her on an antipsychotic that doesn't interfere with her current treatment for depression. Specifically, her family physician would like to avoid any medication that increases the risk of QTc prolongation.

Which of the following antipsychotics has the highest risk of causing QTc prolongation?

Select one:

- ☐ a. Aripiprazole ✖
- ☒ b. Ziprasidone ✔
- ☐ c. Paliperidone ✖
- ☐ d. Risperidone ✖

Rose Wang (ID:113212) this answer is correct. Ziprasidone has a high risk of causing QTc prolongation.

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Schizophrenia**LEARNING OBJECTIVE:**

Identify which antipsychotics have the highest risk associated with causing QTc prolongation.

BACKGROUND:

Antipsychotics are the mainstay of treatment for schizophrenia. Different antipsychotics have different incidence rates for various side effects. The side effect profile, along with each individual patient drives the selection of which antipsychotic to choose. Common side effects of antipsychotics include weight gain, sedation, extrapyramidal symptoms, QTc prolongation, seizure risk, metabolic syndrome (increased blood sugar, hyperlipidemia), hyperprolactinemia, and anticholinergic properties to name some. See below for the PharmAchieve chart[©] which compares different antipsychotics and their side effects:

| | Sexual dysfunction | QT Prolonging | Seizures | Anticholinergic | Postural hypotension |
|--------------|--------------------|---------------|----------|-----------------|----------------------|
| Clozapine | LOW | LOW-MED | HIGH | HIGH | HIGH |
| Olanzapine | HIGH | LOW-MED | LOW | MED-HIGH | HIGH |
| Quetiapine | HIGH | LOW-MED | LOW | HIGH | MED |
| Risperidone | HIGH | LOW-MED | LOW | LOW-MED | MED |
| Paliperidone | LOW | MED | LOW | LOW-MED | LOW |
| Aripiprazole | LOW | LOW-MED | LOW | RARE | LOW |
| Ziprasidone | LOW | HIGH | - | MED | MED |
| Lurasidone | LOW | - | LOW | LOW | LOW-MED |
| Asenapine | - | HIGH | LOW | LOW-MED | MED |

| | Weight gain | ↑ Blood sugar | Dyslipidemia | Hyperprolactinemia | EPS* | Sedation* |
|--------------|-------------|---------------|--------------|--------------------|----------|-----------|
| Clozapine | HIGH | HIGH | HIGH | RARE | RARE | HIGH |
| Olanzapine | HIGH | HIGH | HIGH | LOW | RARE-LOW | HIGH |
| Quetiapine | MED | HIGH | MED | RARE | RARE | HIGH |
| Risperidone | MED | MED | MED | HIGH | MED | MED |
| Paliperidone | LOW-MED | LOW-MED | LOW-MED | HIGH | MED | MED |
| Aripiprazole | LOW | LOW | LOW | RARE | LOW | LOW |
| Ziprasidone | LOW | LOW | LOW | LOW | LOW | LOW-MED |
| Lurasidone | LOW | LOW | LOW | LOW | LOW | LOW-MED |
| Asenapine | LOW-MED | LOW | LOW | - | - | LOW-MED |

RATIONALE:**Correct Answer:**

- **Ziprasidone** - Ziprasidone has a high risk of causing QTc prolongation.

Incorrect Answers:

- **Aripiprazole** - Aripiprazole does not have the highest risk of causing QTc prolongation out of the options given.
- **Paliperidone** - Paliperidone does not have the highest risk of causing QTc prolongation out of the options given.
- **Risperidone** - Risperidone does not have the highest risk of causing QTc prolongation out of the options given.

TAKEAWAY/KEY POINTS:

Ziprasidone is more likely to cause QTc prolongation than many other antipsychotics.

REFERENCE

- [1] Antipsychotics (AP) Comparison Chart. Rx Files. www.rxfiles.ca.
- [2] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrxtx.ca>.
- [3] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [4] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
- [5] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Ziprasidone

Question 8

ID: 50338

Incorrect

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Which of the following drugs can lead to or worsen psychosis?

Select one:

- ☐ a. Bisoprolol ✖
- ☒ b. Levodopa ✔
- ☐ c. Nitrofurantoin ✖
- ☐ d. Metformin ✖

Rose Wang (ID:113212) this answer is incorrect. Bisoprolol is unlikely to lead to, or worsen psychosis.

Incorrect

Marks for this submission: 0.00/1.00.

TOPIC: Schizophrenia**LEARNING OBJECTIVE:**

Understand the drug-related causes of psychosis.

BACKGROUND:

Schizophrenia is a mental disorder in which psychoses are a key hallmark feature. Schizophrenia can cause significant impairment in a patient's ability to function in day-to-day life. The pathophysiology is thought to be related to a dysfunction in dopamine, but it is not fully understood or known. Potential drugs that can lead to or worsen psychosis include cocaine, lysergic acid diethylamide (LSD), phencyclidine (PCP), methamphetamine, marijuana, ecstasy, ketamine, anticholinergics, dopamine agonists and levodopa.

RATIONALE:**Correct Answer:**

- **Levodopa** - Levodopa can lead to, or worsen psychosis.

Incorrect Answers:

- **Bisoprolol** - Bisoprolol is unlikely to lead to, or worsen psychosis.
- **Nitrofurantoin** - Nitrofurantoin is unlikely to lead to, or worsen psychosis.
- **Metformin** - Metformin is unlikely to lead to, or worsen psychosis.

TAKEAWAY/KEY POINTS:

Potential drugs that can lead to or worsen psychosis include cocaine, lysergic acid diethylamide (LSD), phencyclidine (PCP), methamphetamine, marijuana, ecstasy, ketamine, anticholinergics, dopamine agonists and levodopa.

REFERENCE

[1] Reus VI. Psychiatric Disorders. In: Jameson J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Loscalzo J. eds. *Harrison's Principles of Internal Medicine, 20e* New York, NY: McGraw-Hill. [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Arlington, VA, American Psychiatric Association, 2013. [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). *Clinical Handbook of Psychotropic Drugs*, 22nd Edition. Hogrefe Publishing, Toronto, 2017. [4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Levodopa

Question 9

ID: 48481

Correct

Flag question

Send Feedback

Which of the following antipsychotics is the most likely to cause extrapyramidal side effects?

Select one:

- ☒ a. Haloperidol ✔
- ☐ b. Chlorpromazine ✖
- ☐ c. Perphenazine ✖
- ☐ d. Quetiapine ✖

Rose Wang (ID:113212) this answer is correct. Haloperidol is a high-potency first-generation antipsychotic (FGA) with a higher risk of causing extrapyramidal side effects.

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Schizophrenia**LEARNING OBJECTIVE:**

Differentiate between the side effects of low-potency, mid-potency, and high-potency first-generation antipsychotics and second-generation antipsychotics.

antipsychotics and second-generation antipsychotics.

BACKGROUND:

Schizophrenia is a mental disorder in which psychoses are a key hallmark feature. Schizophrenia can cause significant impairment in a patient's ability to function in day-to-day life. The pathophysiology is thought to be related to a dysfunction in dopamine, but it is not fully understood or known.

Antipsychotics are the mainstay of treatment. Antipsychotics are categorized into two distinct categories: first-generation/typical antipsychotics and second-generation/atypical antipsychotics.

First-generation antipsychotics (FGAs) can further be classified as low/mid/high-potency. Their potency can impact the severity of side effects.

Low-potency FGAs are more likely to cause sedation, orthostatic hypotension, weight gain, anticholinergic effects, and lowering of seizure threshold when compared to high-potency FGAs.

High-potency FGAs are more likely to cause extrapyramidal symptoms and hyperprolactinemia.

Second-generation antipsychotics are less likely to cause extrapyramidal side effects but are associated with metabolic symptoms.

Low-potency FGAs: methotrimeprazine, chlorpromazine.

Mid-potency FGAs: loxapine, perphenazine, zuclopenthixol.

High-potency FGAs: haloperidol, pimozide, flupentixol, fluphenazine, trifluoperazine.

Second-generation antipsychotics include quetiapine, risperidone, paliperidone, asenapine, and aripiprazole to name a few.

RATIONALE:

Correct Answer:

- **Haloperidol** - Haloperidol is a high-potency first-generation antipsychotic (FGA) with a higher risk of causing extrapyramidal side effects.

Incorrect Answers:

- **Chlorpromazine** - Chlorpromazine is a low-potency first-generation antipsychotic (FGA) with a lower risk of causing extrapyramidal side effects.
- **Perphenazine** - Perphenazine is a mid-potency first-generation antipsychotic (FGA) with a lower risk of causing extrapyramidal side effects.
- **Quetiapine** - Quetiapine is a second-generation antipsychotic (SGA) with a lower risk of causing extrapyramidal side effects.

TAKEAWAY/KEY POINTS:

Haloperidol is a high-potency first-generation antipsychotic (FGA) with a higher risk of causing extrapyramidal side effects.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
- [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
- [4] Remington G, Addington D, Honer W, Ismail Z, Raedler T, Teehan M. Guidelines for the Pharmacotherapy of Schizophrenia in Adults. *Can J Psychiatry*. 2017;62(9):604-616. doi:10.1177/070674317720448

The correct answer is: Haloperidol

Question 10

ID: S0341

Correct

Flag question

Send Feedback

A medical student on the psychiatry floor of the hospital you work at comes to ask for your advice. There was a new patient that was admitted to the psychiatry unit overnight. FM is a 24-year-old female who lives on campus at a nearby university. Her roommate called 911 late last night after she found FM lying in the snow with minimal winter clothing. When her roommate asked her what she was doing, FM said that she was hiding from the security guard because she believed that her enemies had hired him to spy on her. The roommate told the paramedics that FM was not very coherent in her speech and would often go on long tangents without making a point. FM does not have any prior medical conditions nor does she use recreational drugs or alcohol. Her medication history only consists of ethinyl estradiol/drospirenone 30 mcg/3 mg one tablet PO daily for contraception. The attending physician assessed her this morning and diagnosed her with schizophrenia. She is to be started on paliperidone 6 mg PO daily and the attending asked the medical student to counsel FM's family on the medication. The medical student tells you that he is not very familiar with paliperidone and was hoping you could tell him more about the drug.

All of the following statements about paliperidone are appropriate to mention to the student **EXCEPT**:

Select one:

- ☐ a. Paliperidone is an active metabolite of risperidone ✗
- ☐ b. Paliperidone has less drug-drug interactions compared to other atypical antipsychotics ✗
- ☒ c. Paliperidone cannot cause insomnia ✓
- ☐ d. Paliperidone is associated with dose-related hyperprolactinemia ✗

Rose Wang (ID:113212) this answer is correct. Paliperidone may cause sedation or insomnia however more commonly causes insomnia.

Correct

Marks for this submission: 1.00/1.00.

TOPIC: Schizophrenia

LEARNING OBJECTIVE:

Identify important counselling points regarding paliperidone.

BACKGROUND:

Antipsychotics are the mainstay of treatment for schizophrenia. Antipsychotics are categorized into two distinct categories: first-generation/typical antipsychotics and second-generation/atypical antipsychotics. Paliperidone is one such second-generation antipsychotic. Paliperidone's main side effects include sedation or insomnia (insomnia more common than sedation), weight gain, headaches, orthostatic hypotension, rhinitis, dose-related hyperprolactinemia, extrapyramidal symptoms, and anxiety. Paliperidone is related to risperidone in the sense that it is the active metabolite of risperidone. Paliperidone also does not have a significant risk of drug interactions as it is not metabolized by the liver. Paliperidone also comes in a long-acting injection form. Other atypical antipsychotics that come in the long-acting injectable form include aripiprazole, olanzapine, and risperidone.

RATIONALE:

Correct Answer:

- **Paliperidone cannot cause insomnia** - Paliperidone may cause sedation or insomnia however more commonly causes insomnia.

Incorrect Answers:

- **Paliperidone is an active metabolite of risperidone** - Paliperidone is an active metabolite of risperidone, which is why they share some similarities in their side effect profile.
- **Paliperidone has less drug-drug interactions compared to other atypical antipsychotics** - Paliperidone is not metabolized by the liver so there are fewer drug-drug interactions compared to other atypical antipsychotics.
- **Paliperidone is associated with dose-related hyperprolactinemia** - Paliperidone (like risperidone) can cause hyperprolactinemia in a dose-dependent manner.

TAKEAWAY/KEY POINTS:

Paliperidone can cause sedation or insomnia however it has a higher incidence of insomnia.

REFERENCE:

- [1] Milliken H. Psychoses. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. <https://myrx.ca>.
- [2] American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- [3] Procyshyn RM, Bezchlibnyk-Butler KZ, Jeffries JJ (eds). Clinical Handbook of Psychotropic Drugs, 22nd Edition. Hogrefe Publishing, Toronto, 2017.
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The correct answer is: Paliperidone cannot cause insomnia

Finish review